



The effect of application of a customer-made exergame program on balance and motor skills in preschool children with developmental coordination disorder

I-Hsiu Liou¹ Pei-Yi Lin² Jin-Shuen Chen³ Rong-Ju Cherng²

¹ Department of Physical Medicine and Rehabilitation, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

² Institute of Allied Health Sciences, College of Medicine, National Cheng Kung University, Tainan, Taiwan

³ Department of Administration, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

Background & Purpose

Children with developmental coordination disorder (DCD) are characterized with motor skills difficulty which interferes with their activities of daily living. Due to their motor skills difficulty, children with DCD tend to stay in low level of physical activity which leads to risk of overweight and obese. To improve motor skills and increase physical activity in children with DCD is important. The purpose of this study was to investigate the effect of a laboratory designed customer-made exergame training program on balance and motor function in preschool children with DCD.

Method

25 preschool children with DCD and 16 typically developing preschool children (TD) participated in the study. Only children with DCD received training. The training program was a laboratory-designed customer-made exergame, which is a combination of program with exercise principle and cartoon video game. The program was executed for 45 min/time, 2 times/week and for 4 weeks. The outcome measures included the percentile rank scores of Movement Assessment Battery for Children (MABC-2) and its balance subtest score. Outcome measures also included the time duration of single leg standing, the trajectory of the center of pressure (COP), the number of success trial of the task and the average trajectory of COP in each success trial.

Results

The results showed that children presented significant improvement in the balance performance as demonstrated by the increased percentile rank of balance subtest of MABC-2, the increased time duration of one leg standing, and decreased trajectory of COP during one leg standing after training. They also showed an improvement in motor skill with increased success rate of the game and decreased trajectory per number of success trial of the game.

Conclusions

The results suggest that the laboratory designed customer-made exergame program is effective on balance and motor skills in children with DCD. Further study may examine the effect of such programs on children's physical fitness.

Key word: Developmental coordination disorder; motor skill; balance; exergame; physical activity

Correspondence to:

E-mail address: